

Program - 1

Binary Search

IBM19CS154
SHREESHA N.A

```
.MODEL SMALL
; MACRO TO DISPLAY THE MESSAGE
DISPLAY MACRO MSG
    LEA DX, MSG
    MOV AH, 09H
    INT 21H
ENDM
```

```
.DATA
LIST DB 01H, 5H, 9H, 11H, 13H
NUMBER EQU ($-LIST)
```

```
KEY DB 012H
```

```
MSG1 DB 0DH, 0AH, "ELEMENT FOUND IN THE LIST.. $"
```

```
MSG2 DB 0DH, 0AH, "SEARCH FAILED!! ELEMENT NOT PRESENT $"
```

```
.CODE
```

```
START : MOV AX, @DATA
        MOV DS, AX
```

```
        MOV CH, NUMBER-1 ; HIGH VALUE
```

```
        MOV CL, 00H ; LOW VALUE
```

```
AGAIN : MOV SI, OFFSET LIST
```

```
        XOR AX, AX
```

```
        CMP CL, CH
```

```
        JE NEXT
```

```
        JNC FAILED
```

```
NEXT : MOV AL, CL
```

```
        ADD AL, CH ; LOW+HIGH
```

```
        SHR AL, 01H ; DIVIDE BY 2
```

```
        MOV BL, AL
```

```
        XOR AH, AH
```

```
        MOV BP, AX
```

```
        MOV AL, DS:[BP][SI]
```

```
        CMP AL, KEY ; COMPARE KEY AND A[SI]
```

```
        JE SUCCESS ; IF EQUAL, DISPLAY SUCCESS
```

```
        JC INCLOW
```

```
        MOV CH, BL ; IF KEY > A[SI] SHIFT HIGH
```

```
        DEC CH
```

```
        JMP AGAIN
```

```
INCLOW : MOV CL, BL ; IF KEY < A[SI] SHIFT LOW
```

```
        INC CL
```

```
        JMP AGAIN
```

SUCCESS: DISPLAY MSG1
JMP FINAL

FAILED : DISPLAY MSG2

; JOB OVER, TERMINATE

FINAL : MOV AH, 4CH
INT 21H

END START.